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The Epidemiology of Schizophrenia

SUMMARY

Depending on the criteria used to diagnose schizophrenia, the incidence, prevalence and morbidity risk figures vary. Schizophrenia is probably a group of diseases with separate etiology for which biological markers are still lacking. Genetics and environment both play a part in schizophrenia, but their roles have not been specified. The illness starts in early adult life and is precipitated in vulnerable people by biopsychosocial stress. Historical, demographic, and evolutionary considerations suggest the possibility of a viral pathogen. Birth trauma and family environment also play a role. Schizophrenia usually involves a marked personality change and there are many secondary effects of illness. Improvement generally occurs after many years. (Can Fam Physician 1984; 30:395-397).

SOMMAIRE

Les chiffres utilisés pour décrire l'incidence, la prévalence et les risques de morbidité varient selon les critères utilisés pour diagnostiquer la schizophrénie. La schizophrénie est probablement un groupe de maladies comprenant des étiologies séparées pour lesquelles il nous manque encore des marqueurs biologiques. La génétique et l'environnement jouent un rôle dans la schizophrénie, mais il n'existe pas de spécification sur le rôle de chacun. La maladie commence au début de la vie adulte et, chez les personnes vulnérables, est précipitée par le stress biopsychosocial. Certaines considérations historiques, démographiques et d'évolution semblent suggérer la possibilité d'une pathogénèse virale. Le traumatisme périnatal et l'environnement familiale jouent aussi un rôle. La schizophrénie implique habituellement un changement important de personnalité et la maladie comporte beaucoup d'effets secondaires. On peut s'attendre à une amélioration après plusieurs années.

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EPIDEMIOLOGY IS THE distribution of disease frequency in man. Knowing how frequently an illness occurs, and where, when, and in whom, often can lead to clues about its etiology. The distribution of the disease(s) known as schizophrenia is said to be the same the world over. Its incidence (frequency of new cases) is 0.25 per 1,000 population; its prevalence (total number of cases at any given time) is 4.5 per 1,000 population, and its lifetime morbidity risk—the risk of any individual developing the disease at any time in his or her life—is 1%.[1]

Diagnosing Schizophrenia

The figures above are approximate, because the frequency of schizophrenia depends on how schizophrenia is defined. There are broad definitions which rely heavily on certain key symptoms (i.e., delusions, hallucinations, and disorders of thought). These symptoms are *too* broad; many psychotic illnesses of organic origin and many paranoid or affective psychoses may be erroneously included. The predicted outcome of these illnesses is superior, they are managed differently than schizophrenia, and their etiologies, although uncertain, are probably different as well.

There are other narrow definitions of schizophrenia. These exclude organic, paranoid, and affective psychoses and state that the illness must have a duration of at least six months before schizophrenia can be diagnosed. This definition drastically reduces frequency counts but is probably *too* narrow, in that the partially hereditary nature of the illness disappears when a narrow definition is adopted.[2, 3]

Biologic Markers

This suggests that whatever constitutes the genetic vulnerability leading to schizophrenic illness will eventually be discovered not in the homogeneity of signs and symptoms and illness du-

ration but elsewhere. Where this 'elsewhere' may be is still a mystery. The hope is that a biological marker will appear that is present in certain subgroups of what we now call schizophrenia. Possible markers are enlarged cerebral lateral ventricles as seen on CT scan[4, 5] and increased density of dopamine receptors in the striatum.[6, 7] New imaging techniques make it possible to detect brain markers and, in the next five to ten years, these should be able to define, classify, and point to the separate etiologies of schizophrenic diseases.

Genetics

If diagnoses that are neither overly narrow nor broad are used, the following genetic facts can generally be agreed upon.[8]

1. The risk of schizophrenia in relatives of index cases depends upon how closely related they are. The risk to first degree relatives is ten times that of the general population. This is true whether or not individuals share the same environments when they are growing up.
2. The risk rises if many relatives are affected and if the illness is severe in the index case.
3. Children with schizophrenic fathers are as much at risk as children of schizophrenic mothers.
4. Approximately 50% of identical twins are discordant for schizophrenia.
5. Children of non-schizophrenic parents adopted by parents who later become schizophrenic do not show increased rates of schizophrenia.
6. The relatives of children who develop psychosis before puberty are at no greater risk for schizophrenia than is the general population. This argues against prepubertal psychosis being an early form of schizophrenia.
7. People can develop schizophrenia-like psychoses after head injury, after drug intoxication or in association with epilepsy. Relatives of these patients are at no greater risk for schizophrenia than is the general population. This suggests that phenocopies of schizophrenia exist (i.e., illnesses that have identical manifestations but presumably result from different causes).

Gender and Age of Onset

Schizophrenia characteristically begins in late adolescence or early adulthood. The peak age of incidence is 22 in men and 29 in women. By the end of the risk period (age 45), the prevalence is identical in men and women, but a later age of onset favors better outcome in women.[9] The age at which a person becomes psychotic is crucial because maturation, education, self-esteem, interpersonal skills, vocational skills, familial and societal attitudes are powerfully affected by psychotic illness.[10]

Precipitants

Although nothing is known about the cause of schizophrenia, precipitants are generally acknowledged to be the stressors of early adult life: the biological stressors of hormones, drugs, viruses, insomnia, fatigue; the psychosocial stressors of interpersonal intimacy, dependence and independence conflicts and, in women, the biopsychosocial stress of childbirth. None of these can cause schizophrenia in a person who is not vulnerable, but they can probably precipitate the disease in those destined to become ill.[28]

History

Historically, no record of early onset chronic psychosis exists until about 200 years ago.[11] This may be because of the absence of 'adolescence' as we know it today. Some have suggested that the emergence of a previously non-existent virus approximately 200 years ago is a possible etiological agent.[12] A possible viral etiology for schizophrenia is currently being seriously reconsidered. It might explain the enlargement of lateral ventricles in the brain in 15-20% of those with schizophrenia.[13]

Evolutionary Considerations

The historical findings would also explain the puzzling question of why schizophrenia continues to be a common disorder. If it existed in early man, it should have died out on the grounds that individuals with schizophrenia (especially men) rarely reproduce. This was especially true when schizophrenics were institutionalized for life. For the last 30 years, schizophrenics have spent most of their lives outside institutions but even today, relatively few marry and become parents.[14] Under these circumstances, the genes for schizophrenia should have disappeared. The speculation that this illness emerged fairly recently makes its continuing prevalence understandable.

Demographic Features

Schizophrenics tend to be born in the winter months,[15] and there is a higher prevalence of schizophrenia in the lower socioeconomic classes. These facts might support a viral etiology, except that a great deal of controversy surrounds their interpretation. The most commonly held explanation for the higher prevalence of schizophrenia in the lower classes is that once they become ill, schizophrenics are unemployable, and migrate to the lower classes and crowded residential areas. The social classes of schizophrenics' parents do not differ from those of control subjects.[16]

There are no differences in the incidence of schizophrenia in rural and urban areas. Incidence is similar throughout the world although it seems to be very low in some areas (e.g., Papua New Guinea and the Solomon Islands). Cereal grains are not grown in these areas; grains have been implicated in the development of schizophrenia.[17] Nutritional theories about schizophrenia abound, but today they generally are not seriously held by psychiatrists.

Birth Trauma

Perinatal problems have been associated with schizophrenia in adults.[18] For instance, in twins discordant for schizophrenia, the ill twin usually weighed less at birth. Birth order and left-handedness have also been studied, but findings on both are inconsistent.[19, 20]

Family Structure

In the 1950s and 1960s, many North American psychiatrists viewed schizophrenia as a product of a pathological family structure and faulty family communication.[21] The methodology of the early studies has been called into question and, the results of family intervention having proved counterproductive, this view has been largely abandoned. Family climate can, however, precipitate recurrence of the ill-

ness in those already affected.[22, 23] In family interventions today, counsellors usually advise reduced face-to-face contact with the schizophrenic family member and psychological distance. Criticism, overinvolvement and covert hostility in the family appear to precipitate acute schizophrenia requiring admission to hospital.[24]

Premorbid Personality

Some individuals with schizophrenia have a history of ongoing psychological problems since childhood. Girls in this category are most often described as shy and withdrawn, boys as overactive and delinquent.[25] However, most individuals who develop schizophrenia do so fairly suddenly, after an unremarkable premorbid development. The onset of illness marks a gross personality change which may be important in diagnosis. Psychotic symptoms in a personality which is basically unchanged from the premorbid one suggest a personality disorder rather than schizophrenia.

Results of Illness

Schizophrenic illness has many psychosocial sequelae. Because of continuing demoralization and lack of ambition, former patients find it difficult to resume their previous lives. Frequently they isolate themselves from friends, find it impossible to make new contacts, avoid gatherings of people, and find group situations such as school or work exceedingly difficult. Since illness has interrupted schooling and vocational training, former patients are often unskilled and unemployable. More often than not, they require financial assistance and live in poor, uncomfortable, crowded, sometimes unhygienic and hazardous surroundings.[29] They require medication to prevent further episodes of illness and these medications contribute to peculiarities of gait and movement which identify them as 'mental patients'. Without the medications, hospitalizations for acute attacks can occur several times a year.

The mortality of schizophrenics is high—probably 50 times higher than the mortality of the general population. This is mostly attributable to suicide.[26] The schizophrenic most at risk for suicide is the young man who has denied the implications of his illness for the first several years after onset but who gradually loses his capacity for denial and gives up in the face of what he experiences as a painful, empty life. For those who persevere, schizophrenia tends to become less troublesome after five to ten years. After age 40, episodes are less frequent, the dose of maintenance medication can be quite low, and the quality of life improves. Twenty year follow-up studies are much more optimistic in terms of symptom severity, hospital readmission, and quality of life than are five year follow-up studies.[27]

Conclusion

In summary, schizophrenia, which still is imperfectly defined and diagnosed, is a common group of illnesses which begin in early adult life. There is a hereditary component and an environmental component to etiology, but neither has yet been specified. Although many good treatments are available for the acute phase, the illness and treatments have unfortunate sequelae. However, gradual improvement does occur over time. ◉

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